

[002]        This application claims priority from German Application Serial    ♦♦  
              No. 102 58 515.6 filed December 14, 2002.     ♦♦

[003]        FIELD OF THE INVENTION     ♦♦

[004]        ~~The invention relates to a planetary transmission according to claim 1 and~~    ♦♦  
              ~~to the object of the Applicant's older patent application having file~~    ♦♦  
              ~~reference 102 35 280~~ No. DE 102 35 280.     ♦♦

[005]        BACKGROUND OF THE INVENTION     ♦♦

[006]        The planetary transmission, according to the applicant's older patent    ♦♦  
              application DE 102 35 280 has a one-piece planet carrier supported opposite to    ♦♦  
              a housing via a cross roller bearing with a split inner ring. The inner ring  
              supports itself on a collar of the planet carrier and is axially fixed by separate  
              retaining means, that is, it is pressed against the collar of the planet carrier.  
              Such an additional retaining component, which consists of individual fingers and  
              does not abut on the entire periphery of the inner ring, does not produce any  
              uniform and sufficiently fixed support of the inner ring. Besides, such a solution  
              appears to be costly.

[008]        ~~Said problem is solved by the characteristic features of claim 1.~~    ♦♦  
              The division of the planet carrier achieves as advantage that the supporting    ♦♦  
              means for the inner ring, particularly a split inner ring, can be integrated in the  
              planet carrier. Thus, no additional retaining means are required.

[009]        SUMMARY OF THE INVENTION     ♦♦

[010]        ~~Advantageous developments of the invention result from the sub-claims:~~    ♦♦  
              The planet carrier is thus divided in a radial plane so that two flatly mating    ♦♦  
              "halves" result which are centered relative to each other and axially braced with  
              each other by adequate means such as screw bolts. The two "halves" can be  
              advantageously centered via fitting sleeves inserted in the through holes for the  
              step planets. Thus no additional fitting holes are needed. It is further  
              advantageous when both "halves" of the planet carrier form together a bearing

seat for the inner ring of the cross roller bearing and each of them has one shoulder which impresses itself on the whole periphery of the inner ring. A stable axial fixing of the inner rings and of the cross roller bearing is thus obtained. The two-part planet carrier is advantageously constructed so that one "half" or the first part is designed as planet carrier proper, that is, as carrier of the planetary gears supported in the carrier by means of bolts. The other "half" or the second part forms the output of the planetary transmission and is therefore provided with an output flange, for example, for mounting an output shaft.

[011]            BRIEF DESCRIPTION OF THE DRAWINGS            ♦♦

[012]    ~~One embodiment of the invention which will be described in detail herebelow is shown in the drawing wherein~~            ♦♦

The invention will now be described, by way of example, with reference to the accompanying drawings in which:            ♦♦

[016]            DETAILED DESCRIPTION OF THE INVENTION            ♦♦

[017]            Fig. 1 shows an axial section through a planetary transmission 1 which is constructed similarly to the planetary transmission of the ~~older patent application 102 DE 102 35 280~~. The planetary transmission 1 is driven via an input shaft 2 which extends axially in the interior of the transmission and carries on its face and an inner sun gear 3 with conic toothing (not shown). The sun gear 3 is engaged with two step gear 6 or pinion also with conic toothing. A step gear 5 and the pinion 6 are interconnected by an intermediate shaft 7. A planet carrier made of two parts or "halves" to wit, a first part 8 situated to the right in the drawing and a second part 9 situated to the left in the drawing. Said two parts 8, 9 are in the area of a partition line 10 flatly joined together and are axially braced with each other by screw bolt 11. Both parts 8, 9 are also centered with each other via fitting sleeves ~~[[12]]~~ 32. Between the two parts 8, 9 is clamped a cross roller bearing 12 having an inner ring 13 which is split and comprises two inner ring halves 13a, 13b. Via the cross roller bearing 12, the planet carrier 8, 9 is supported opposite a housing 14. With the housing 14 is

connected a ring gear 15 having an inner toothing. The planet carrier part 9 on the output side has, in the area of the inner ring 13, one shoulder 16 and the planet carrier part 8 on the input side has an oppositely oriented shoulder 17. Between both shoulders 16, 17, the two parts 9, 8 form each a bearing seat 9a, 8a which serves to accommodate the two inner rings 13a, 13b. The cross roller bearing 12 or both inner rings 13a, 13b are therefore assembled before the junction of both parts 8, 9 of the planet carrier. Both inner rings 13a, 13b are precisely adjusted or braced on one side via the screw bolts 11, and on the other side, via washers (not shown here), between the inner rings 13a, 13b and/or the shoulders 16, 17. Thereby a minimal gap results in the area of the parting line 10. The torque between both parts 8, 9 is transmitted on one side by the non-positive engagement produced as result of the prestress of the screw bolts 11 and on the other side by positive engagement as consequence of the fitting sleeves ~~[[12]]~~ 32. The step planets 4 are supported via intermediate shafts 7 in bearing holes 18 of the output-side part 9. In the area of said bearing hole 18 are also inserted the already mentioned fitting sleeves ~~[[12]]~~ 32 which extend beyond the partition line 10 into the first part 8. The intermediate shaft 7 continues via the pinion 6 into a bearing stud 7a which is supported in the part 8 and is fixed by an adjusting device 19 in its precise axial position. The housing 14 has a fastening flange 20 with which the whole planetary transmission 1 can be screwed on a motor (not shown) which, at the same time, has the input shaft 2. To that extent it is possible to omit a bearing of the planet carrier part 8 opposite the input shaft 2.

### Reference numerals

1 planetary transmission	14 housing
2 input shaft	15 ring gear
3 sun gear	15a inner toothing
4 step planet	16 should (part 9)
5 large step gear	17 shoulder (part 8)
6 small step gear (pinion)	18 bearing hole
7 intermediate shaft	19 adusting device
7a bearing stud	20 fastening flange
8 first part (planet carrier)	21 pocket in planet carrier
8a bearing seat	22 planetary gear
9 second part (planet carrier)	23 planetary bolt
9a bearing seat	24 sleeve
10 parting line	25 screw bolt
11 screw bolt	26 washer
12 cross roller bearing	27 recess
13 inner ring	28 output flange
13a inner ring half	29 fastening hole
13b inner ring half	<u>32 fitting sleeve</u>

